

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION**

STERIGENICS U.S., LLC,
a Delaware limited liability company,

Plaintiff,

V.

No. 19-cv-01219

Hon. Matthew Kennelly

JOHN KIM, not individually, but solely in his capacity as Acting Director of the Illinois Environmental Protection Agency, and the ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,

Defendants.

**DEFENDANT’S RESPONSE IN OPPOSITION
TO EMERGENCY MOTION FOR TEMPORARY RESTRAINING ORDER,
PRELIMINARY INJUNCTION, AND PERMANENT INJUNCTION**

EXHIBIT B

Affidavit of Dyron Hamlin

Part 1

AFFIDAVIT OF DYRON HAMLIN, MS, PE, CIH

I, Dyron Hamlin, certify under penalty of perjury pursuant to Section 1-109 of the Illinois Code of Civil Procedure, that the statements set forth in this affidavit are true and correct in substance and in fact to the best of my knowledge and belief, and further state that if called upon to testify in this matter, I would competently testify as follows:

1. I am currently a Principal at GHD Services, Inc. (“GHD”), and I work as a professional chemical engineer (PE, Arkansas #12728) and certified industrial hygienist (CIH) in the Little Rock, Arkansas office. I have been with GHD for over eight years. I have a Master of Science in Engineering (MSE) – Chemical Engineering, from the University of Texas at Austin, and a Bachelor of Science in Chemical Engineering (BSChe) from the University of Arkansas.

2. My duties and responsibilities for GHD as a professional chemical engineer and certified industrial hygienist include, but are not limited to, conducting chemical and environmental engineering, meteorological, and industrial hygiene analyses for the transportation, industrial, academic and regulatory sectors.

3. Pursuant to a professional services agreement entered into between GHD and the Village of Willowbrook, Illinois (“Village”) on or about September 10, 2018, (Village Resolution No. 18-R-60), GHD was retained to perform services in response to an ATSDR report issued in August 2018 (“Report”), which evaluated the air levels of ethylene oxide gas (“EtO”) near a local business, Sterigenics USA, LLC (“Sterigenics”). The services provided by GHD included, but were not limited to, the preparation of a sampling plan related to the measurement of ethylene oxide levels in ambient air using accepted and scientific techniques in various locations in the Village, the transfer of these samples using established chain of custody techniques to SGS Galson Laboratories (“Galson”) for certified testing of the samples, the review of the test results

prepared by Galson of these samples, and the certification of the quality assurance and quality control of these test results.

4. On or about September 19, 2018, GHD submitted its "Proposal for Professional Industrial Hygiene and Risk and Risk Assessment Services Hazard Assessment and Ambient Air Sampling -- Ethylene Oxide Village of Willowbrook, Illinois", a true and correct copy of which is attached hereto as Exhibit A (the "November 2018 Sampling Plan").

- a. It is the regular practice of GHD that a sampling plan be prepared prior to conducting sampling of the nature set forth therein.
- b. I assisted with the preparation of the November 2018 Sampling Plan.
- c. The November 2018 Sampling Plan has been kept in the course of GHD's regularly conducted business activity.

5. Pursuant to the November 2018 Sampling Plan, on November 16 and 17, 2018, GHD collected thirty-four (34) 24-hour ambient air samples at eleven (11) discrete locations throughout the Village ("November 2018 Sampling Program"). A true and correct copy of a map of the eleven (11) locations showing the test results for each location is attached hereto as Exhibit B.

- a. It is the regular practice of GHD to prepare a map showing the locations of the areas to be tested in a sampling plan.
- b. I assisted with the preparation of the map supporting the November 2018 Sampling Plan.
- c. The map supporting the November 2018 Sampling Plan has been kept in the course of GHD's regularly conducted business activity.

6. On or about December 10, 2018, GHD prepared its “Ethylene Oxide Air Monitoring Report Village of Willowbrook” setting-forth the results and conclusions derived from the November 2018 Sampling Program and November 2018 Sampling Plan. A true and correct copy of GHD’s December 10, 2018, “Ethylene Oxide Air Monitoring Report Village of Willowbrook” is attached hereto as Exhibit C.

7. On or about January 8, 2019, GHD submitted its “Proposal for Professional Industrial Hygiene and Risk Assessment Services Hazard Assessment and Ambient Air Sampling – Ethylene Oxide Village of Willowbrook, Illinois,” (the “February 2019 Sampling Plan”), a true and correct copy of which is attached hereto as Exhibit D.

- a. It is the regular practice of GHD that a sampling plan be prepared prior to conducting sampling of the nature set forth therein.
- b. I assisted with the preparation of the February 2019 Sampling Plan.
- c. The February 2019 Sampling Plan has been kept in the course of GHD’s regularly conducted business activity.

8. Pursuant to the February 2019 Sampling Plan, on February 5-11, 2019, GHD collected twenty-two (22) ambient air samples at five (5) discrete locations throughout the Village (“February 5-11, 2019 Sampling Program”). A true and correct copy of a map of the five (5) locations is attached hereto as Exhibit E.

- a. It is the regular practice of GHD to prepare a map showing the locations of the areas to be tested in a sampling plan.
- b. I assisted with the preparation of the map supporting the February 2019 Sampling Plan.

c. The map supporting the February 2019 Sampling Plan has been kept in the course of GHD's regularly conducted business activity.

9. GHD has conducted each of the Sampling Programs identified herein in conformance with the respective Sampling Plans, using the following processes and procedures:

- a. GHD receives sample equipment (6-liter SUMMA canisters and pressure regulators set for a flowrate allowing for 24-hour sampling) from Galson under standard chain of custody procedures. The sample equipment is cleaned and validated by Galson prior to shipment.
- b. GHD receives the sample equipment from Galson at the GHD office in Rosemont, Illinois.
- c. GHD deploys the sample equipment at the designated locations in or about the Village on mounting poles providing for sample collection at breathing zone height (approximately 5 to 6 feet above the ground).
- d. At that place and time, as part of its regular practice, GHD records start times, GPS coordinates, initial pressures (where applicable), and other related information in GHD's iPad data collection system. These electronic notes are stored on GHD's internal computer servers as business records kept in the ordinary course of business. All of the electronic notes collected by GHD are subject to its internal ISO 9001 Quality System policy.
- e. GHD retrieves the sample equipment after approximately 24 hours of sampling, at which time the pressure regulators are removed from the sample equipment, and the stop time of sampling is noted in the iPad data collection system as described above.

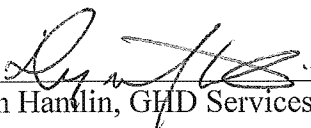
f. The samples are then shipped overnight by FedEx pursuant to standard chain of custody procedures to Galson for testing as to the levels of ethylene oxide recorded by the sample equipment during the 24 hour sampling period. A Level IV data package is prepared by Galson and reviewed by a GHD Project Chemist, for each of the samples tested by Galson. This data package includes chromatograms, canister cleaning certifications, pressure measurements and calculations.

10. A true and correct copy of GHD's data table corresponding to the Sampling Programs is attached hereto as Exhibit F (the "Full Data Table").

- a. It is the regular practice of GHD that a table or chart be prepared following the completion of the analysis of the sampling data that sets forth the results of the sampling conducted by GHD.
- b. I assisted with the preparation of the Full Data Table.
- c. The Full Data Table has been kept in the course of GHD's regularly conducted business activity.

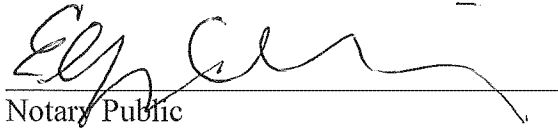
11. A true and correct copy of the November 2018 and February 2019 "wind rose" information is attached hereto as Exhibit G.

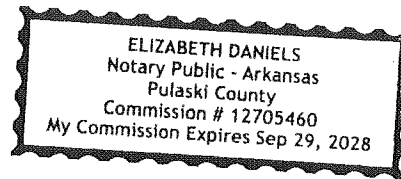
FURTHER AFFIANT SAYETH NAUGHT,

By: 
Dyron Hanlin, GHD Services, Inc.

Subscribed and sworn before me this 18th day

of February, 2019.


Notary Public



Pulaski County, State of Arkansas

EXHIBIT A



September 19, 2018

Reference No. 11183332

Tim Halik
Village Administrator
Village of Willowbrook
835 Midway Drive
Willowbrook, IL 60527

Dear Mr. Halik:

**Re: Proposal for Professional Industrial Hygiene and Risk Assessment Services
Hazard Assessment and Building Inspection
Village of Willowbrook, Illinois**

1. Introduction

GHD Services Inc. d/b/a GHD Environmental and Consulting Inc. (GHD) is pleased to submit this Proposed Scope of Work and Cost Estimate (Proposal) to provide indoor air quality (IAQ) services for commercial / residential properties located near within the town of Willowbrook, Illinois. The assessment of IAQ within specified buildings shall be performed to evaluate the potential risk of exposure to ethylene oxide (EO) aerosols. Specifically, GHD health professionals will collect ambient air samples for EO from occupied spaces and outdoor locations for comparison to the applicable community / worker health guidelines established for EO. These services are requested on behalf of city officials for The Village of Willowbrook and shall be provided to protect the health and safety of residents, workers, and consumers in the area.

On July, 26, 2018 the Agency for Toxic Substances and Disease Registry (ATSDR) – Region 5, a division of the federal Department of Health and Human Services submitted a letter to the Director for Region 5 office for the Environmental Protection Agency (EPA) – Region 5 summarizing the health risk for residents potentially exposed to EO. In this letter, the ATSDR references health assessment determinations (including air sampling data comparisons) related to EO emissions from the Sterigenics Corporation (Sterigenics) manufacturing facility located at in Willowbrook, Illinois. It is GHD's understanding that Sterigenics uses EO as part of the sterilization processes for medical equipment and other devices. EO is listed in the air permit for the Sterigenics – Willowbrook facility and is linked to adverse acute / chronic health effects in humans.

GHD envisions the IAQ assessment services shall consist of two main tasks, as follows:

- Task 1 – Quantify EO concentrations inside occupied spaces and compare the air sampling data to the established community risk levels in order to determine risk for exposures for building occupants. Make public health hazard determination based on findings and otherwise provide guidance on the risk for occupancy.
- Task 2 – Quantify EO concentrations from selected locations in outside ambient air within the community of Willowbrook to assess potential impacts for recognized receptors. Identify additional sources of EO emissions within the immediate areas around the Sterigenics facility.

2. Scope of Work

GHD will rely on an experienced team of health professionals to meet the expectations for this project. The GHD team includes professionals from industry and regulatory agencies having a broad range of applicable industrial hygiene, risk assessment, and toxicology experience. The on-site portion of the project will be conducted by a GHD Certified Industrial Hygienist (CIH) with support from additional GHD resources.

It is GHD's understanding that eight potentially impacted buildings within the town of Willowbrook have been identified for assessment based on the potential of exposures to EO for building occupants. Based on the scope of work, GHD anticipates that the on-site portion of the assessment will be completed in a single visit to each building. A list of the buildings to be included in this assessment are listed in Table 2.1.

Table 2.1 List of Buildings for Assessment

Test Site #	Name / Facility Type	Building Address
1	Gower Middle Elementary School	7941 S. Madison Street
2	Gower West Elementary School	7650 Clarendon Hills Road
3	Hinsdale South High School	7401 S. Clarendon Hills Road
4	Conev's Cradle Infant Care/Residence	234 Midway Drive
5	Paul Farber Residence	7619 Virginia Court
6	Willowbrook Village Hall	835 Midway Drive
7	Willowbrook Police Station	7760 Quincy Street
8	Target Retail Store	7601 S. Kingery Highway

GHD will perform the following field activities expected to be representative of normal operating conditions. A list of the buildings to be included in this assessment are

2.1 Visual Inspection and Building Conditions Assessment

GHD will visually inspect each building to determine the general conditions and the building use. The visual inspection will include a thorough inspection of the building which will include the accessible areas of the buildings' HVAC ducts, generally the first 2 – 3 feet inside the supply end of a register. GHD will document atmospheric conditions in the affected areas using both photographic and hand written documentation. Measurements of the temperature, relative humidity, and carbon dioxide will be recorded as well as any unusual odors.

2.2 Area Airborne Sampling

To determine the representative inhalation exposures for building occupants, GHD will collect area air samples for EO inside the occupied spaces. The area air samples shall be collected at breathing zone height (approximately 5 to 6 feet) in an effort to simulate representative inhalation exposures for the affected occupants in each area. GHD anticipates collecting up to four area air samples in each building and up to 6 area air samples in selected outdoor locations. Area air samples shall be collected using evacuated summa canisters with 24-hour metered flow regulators. All air samples shall be collected according to the Environmental Protection Agency (EPA) Method TO-15 including the analysis for EO. All samples shall be shipped under appropriate Chain of Custody (COC) procedures to Eurofins Air Toxics Laboratory for analysis. Galson is accredited by the American Industrial Hygiene Association (AIHA) for the analysis of air samples. The laboratory results for the air samples will be relied on to identify any occupied areas where airborne EO concentrations are present in greater concentrations compared to background.

2.3 Field Documentation

Appropriate field documentation will be collected including a daily activity log, sampling field forms, site observations, and other pertinent documentation. The daily activity logs will consist of observations and field notes taken throughout the day. The daily log will be recorded either in bound log books or on pre-printed daily log forms. Schedule and Deliverables

GHD will work with the Village of Willowbrook to set up a mutually agreeable schedule for the assessment. GHD understands that the site visit is scheduled for completion during the third / fourth quarters of 2018. To ensure that this deadline is met, GHD will make the necessary personnel and resources available for this project.

At the completion of the site visit, GHD will provide a written report to the Village of Willowbrook within 10 business days after receiving the laboratory results. The report will include the following:

- An executive summary
- A comparison of sampling results to the community risk criteria
- A site plan presenting monitoring and sampling locations
- Determination on the occupancy for building occupants
- Conclusions and recommendations

3. Estimated Cost

This proposal describes the estimated cost for providing the services described above. Costs for any additional services or labor will be billed on a time and materials basis and will require prior approval by the Village of Willowbrook. We estimate the cost to provide these services will be approximately **\$31,500**. This figure includes the estimated costs for labor, expenses, travel (from GHD office), laboratory fees, and equipment usage and represents our good-faith attempt to approximate the cost to achieve the goals of this project and the deliverables noted above. For your consideration, GHD has divided the estimated costs accordingly.

Table 3.1 Cost Estimate

Description	Estimated Cost
Labor (travel, project coordination, on-site activities)	\$13,000
Labor (data review, reporting, conclusions)	\$4,500
Sample Analysis (equipment use and laboratory fees)	\$11,500
Expenses (travel, shipping, transportation)	\$2,500
Total	\$31,500

4. Closing

We appreciate the opportunity to submit this Proposal to the Village of Willowbrook and look forward to working with you. Please do not hesitate to contact us if you require further information or clarification regarding the Scope of Work and Cost Estimate presented herein.

Sincerely,

GHD Services Inc.

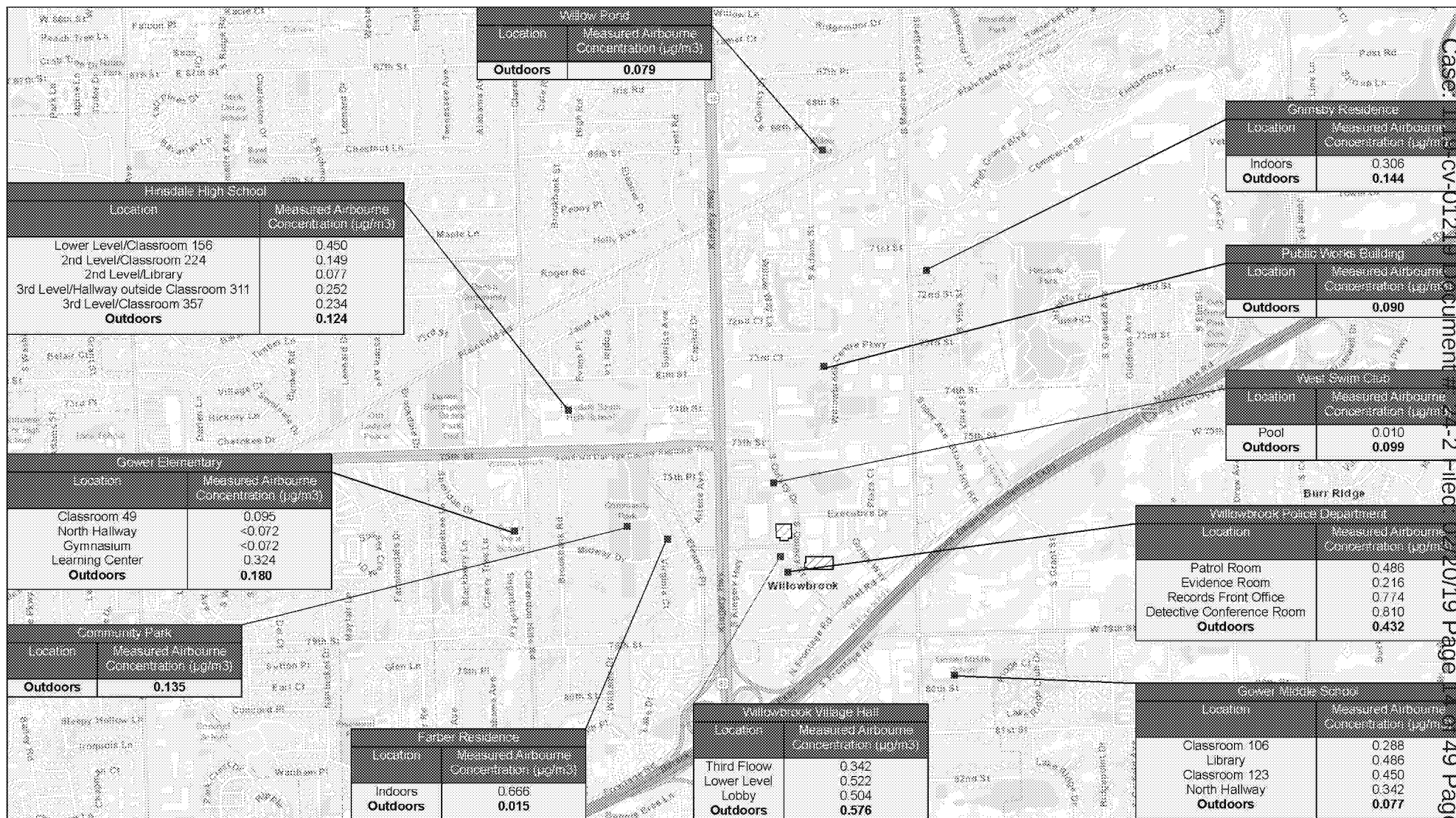


Benjamin Chandler, M.S., CIH

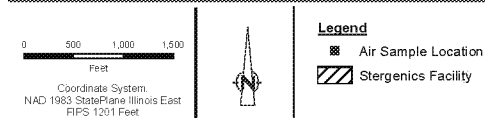
BLC/lf/1/PR/Clt.

cc: Renee Cipirano, Schiff Harden, LLC
Gayle Neal, Village of Willowbrook
Dyron Hamlin, GHD
Lucy Frazier, Lucy Frazier Consulting

EXHIBIT B



Source: ESRI World Street Map, Esri, DeLorme, HERE, USGS, Intermap, IPC, NRCAN, Esri, Japan, METI, TomTom



VILLAGE OF WILLOWBROOK, ILLINOIS

NOVEMBER 16-17, 2018
AREA AIR SAMPLING LOCATIONS

11183332
Dec 21, 2018

FIGURE 3

GIS File: Q:\GIS\PROJECTS\11183000\11183332\Layouts\001\11183332-00\001\GIS-WA005.mxd

EXHIBIT C



Ethylene Oxide Air Monitoring Report

Village of Willowbrook

Prepared at the Request of Tom Bastian, Village Attorney

Tim Halik, Village Administrator
Village of Willowbrook
835 Midway Drive
Willowbrook, IL 60527

GHD | 11719 Hinson Road Suite 100, Little Rock, Arkansas 72212

11183332 | Phase 01 | Report No 01 | December 10, 2018



Executive Summary

On November 16, 2018, GHD Services Inc. (GHD) conducted air sampling for the Village of Willowbrook to assess the potential for exposures to Village workers and members of the community by ethylene oxide (EtO) produced by the Sterigenics facilities in Willowbrook, Illinois.

The sampling program for this assessment was designed to include public buildings, private residences, public parks, and schools, at locations upwind and downwind of the Sterigenics site. All samples were collected within a 1-mile radius of Sterigenics to evaluate this facility as a potential source of EtO. GHD performed continuous (24-hour) air sampling of 11 commercial and residential facilities, including 34 indoor and outdoor locations. Sample measurement and analysis incorporated SUMMA canisters and the US Environmental Protection Agency (USEPA) TO-15 testing method.

The air sampling data collected were compared to results from testing by the USEPA in May 2018, as further reported in the Consultation Letter published by the Agency for Toxic Substances and Disease Registry (ATSDR) in August 2018. The air sampling results indicated the presence of EtO throughout Willowbrook, in samples both upwind and downwind of Sterigenics. The EtO levels identified by the Village's sampling effort ranged from 5 to 10 times lower than those identified by the USEPA in May of 2018. Results from outdoor samples at specific upwind locations indicated the presence of EtO at an average of approximately 0.071 ppb. The Village's sampling results also indicated that EtO is present in locations both upwind and downwind of Sterigenics above the long-term risk-based level used by the USEPA and ATSDR in the May and August 2018 sampling and report. A longer-term sampling study is required to draw conclusions appropriate to long-term risk exposure criteria. It is important to recognize that we do not have enough testing data at this time to know if the concentrations measured by either the Village or USEPA accurately represent long-term exposure levels for the Village.

GHD evaluated the EtO concentrations inside buildings relative to the amounts of EtO outside buildings. The measured levels of EtO inside buildings were found to be higher than the outside at all locations sampled, with the exception of the Village Hall. This suggests possible indoor sources of EtO, which have been noted to be present in various household and consumer products such as cigarettes, auto products, cleaners, food which has been sterilized using EtO, and home maintenance products. Further research is needed to evaluate the potential adsorption of low levels of EtO to building and indoor materials over time; for example, indoor sources such as those noted above could yield low levels of EtO indoors, which could temporarily accumulate until exchange with outdoor air. Indoor samples in the Willowbrook Police Department indicated an average EtO level of 0.32 ppb. Indoor samples in the Village Hall indicated an average EtO level of 0.25 ppb. Indoor locations upwind of the Sterigenics facilities indicated an average EtO level of 0.137 ppb, while indoor locations downwind of the Sterigenics facilities indicated an average EtO level of 0.264 ppb (including the Village Hall and Police Department).

Based on these results, we conclude that further evaluation is recommended across a broader range of sampling conditions including: meteorological, Sterigenics production rates, further afield background locations, and further study, on a longer term basis, comparing indoor and outdoor levels at the same location, to completely assess the potential contribution by Sterigenics to air quality in the Village of Willowbrook.

All data contained in this report has been reviewed and interpreted by a GHD Certified Industrial Hygienist (CIH) and may be considered final.



Table of Contents

1.	Background.....	3
2.	Objectives	3
3.	Methodology	3
4.	Results.....	4
5.	Discussion	5
6.	Electronic Field Documentation and Reporting	6
7.	Conclusions and Recommendations.....	7
8.	Quality Assurance/Quality Control and Reporting	7

Table Index

Table 4.1	Summary of Area Air Sampling Results for Ethylene Oxide	4
-----------	---	---

Appendix Index

Appendix A	Map of Real-Time Readings
Appendix B	Wind Rose Plots
Appendix C	Lab Reports
Appendix D	Electronic Sample Collection Information



1. Background

On November 16, 2018, GHD Services Inc. (GHD) was retained by the Village of Willowbrook to provide air monitoring to assess the potential community exposures of ethylene oxide (EtO) produced by the Sterigenics facilities in Willowbrook, Illinois. Air monitoring activities were conducted in accordance with the air monitoring plan prepared by GHD. Analysis of the samples was conducted using the USEPA TO-15 testing method.

On-site field staff included a GHD Certified Industrial Hygienist (CIH) Project Manager with specific training on hazard evaluation (including air monitoring instrumentation and field data collection). All air monitoring activities and field documentation were directed by the GHD Project Manager. All air monitoring strategies were implemented and coordinated by a GHD Certified Industrial Hygienist (CIH).

2. Objectives

The specific objectives of the overall assessment of the Willowbrook EtO Air Sampling were to:

- Identify if immediate public health concern is present to indicate need for action.
- Perform real time air monitoring for ethylene oxide and to determine airborne concentrations throughout the Willowbrook community.
- Begin assessing whether there is a notable difference between indoor air concentrations of EtO and outdoor air concentrations of EtO at the same locations.
- Identify additional sources of EtO emissions within the immediate areas around the Sterigenics facility.
- Ensure that the monitoring program is designed and implemented to comply with the air monitoring requirements of the applicable EPA methods.

3. Methodology

To determine the representative inhalation exposures for building occupants, GHD collected area air samples for EtO inside the occupied spaces. The area air samples were collected at breathing zone height (approximately 5 to 6 feet) in an effort to simulate representative inhalation exposures for the affected occupants in each area. GHD collected up to four area air samples in each building and up to eleven area air samples in selected outdoor locations. In total, thirty-four (34) SUMMA canisters (6-Liter) were employed.

Area air samples were collected using evacuated SUMMA canisters with 24-hour metered flow regulators. All air samples were collected according to the Environmental Protection Agency (EPA) Method TO-15 including the analysis for EtO. All samples were shipped under appropriate Chain of Custody (COC) procedures to SGS Galson Laboratory in East Syracuse, New York for analysis. Galson is accredited by the American Industrial Hygiene Association (AIHA) for the analysis of air samples. The laboratory results for the air samples were relied on to identify any occupied areas where airborne EtO concentrations are present in greater concentrations compared to background.

GHD conducted a visual inspection of each building prior to and during deployment of air sample canisters to evaluate the potential presence of other sources of ethylene oxide. GHD also placed sample canisters



to avoid interference from both natural and forced building ventilation by placing sample canisters away from vents windows.

The Galson laboratory analytical method specifies a detection limit of 0.04 ppbv (0.072 $\mu\text{g}/\text{m}^3$). The reported USEPA method detection limit is 0.045 ppbv (0.08 $\mu\text{g}/\text{m}^3$) which may account for the non-detects obtained in their sampling thus far.

4. Results

A GHD CIH took 34 indoor and outdoor SUMMA canister samples throughout the Village of Willowbrook. A map of the sample locations, alongside a table summarizing the results, can be found in Appendix A.

Throughout the sampling period (approximately 0800 on 11/16/2018 to 1700 on 11/17/18), the wind was blowing predominantly from the West and the North according to Wind Rose data retrieved from the Chicago DuPage Airport and the Chicago Midway Airport. Appendix B contains a Wind Rose plot of the meteorological data, which depicts the direction and speed *from which* the wind was blowing during the entire sample period. Based on these data, as well as on-site observations by sampling personnel, all samples to the north and west of both Sterigenics facilities may be considered upwind sample locations during the sampling period.

The average measured outdoor EtO levels of the upwind samples was 0.071 ppb EtO. The average downwind outdoor level was 0.201 ppb. The average indoor levels upwind and downwind were 0.137 and 0.264 ppb. The measured levels of EtO inside buildings were found to be higher than outside buildings, with the lone exception of the Village Hall, where the outside level was measured at 0.32 ppb, and the inside levels were an average of 0.25 ppb. Table 4.1 lists the results of all of the samples collected.

Table 4.1 - Summary of Area Air Sampling Results for Ethylene Oxide – Village of Willowbrook, Illinois (Collected on November 16-17, 2018)

Location ID	GHD Sample ID	Sample Location	Measured Airborne Concentration	
			$\mu\text{g}/\text{m}^3$	ppb
1	Air-11183332-001	Willowbrook Village Hall – Third Floor	0.34	0.19
	Air-11183332-002	Willowbrook Village Hall – Lower Level	0.52	0.29
	Air-11183332-003	Willowbrook Village Hall – Lobby	0.50	0.28
	Air-11183332-004	Willowbrook Village Hall – Outdoors	0.58	0.32
2	Air-11183332-005	Willowbrook Police Department – Patrol Room	0.49	0.27
	Air-11183332-006	Willowbrook Police Department – Evidence Room	0.22	0.12
	Air-11183332-007	Willowbrook Police Department – Records Front Office	0.77	0.43
	Air-11183332-008	Willowbrook Police Department – Detective Conference Room	0.81	0.45
	Air-11183332-009	Willowbrook Police Department – Outdoors	0.43	0.24



Location ID	GHD Sample ID	Sample Location	Measured Airborne Concentration	
			$\mu\text{g}/\text{m}^3$	ppb
3	Air-11183332-010	Farber Residence – Indoors	0.67	0.37
	Air-11183332-011	Farber Residence – Outdoors	0.15	0.085
4	Air-11183332-012	West Swim Club – Outdoors	0.10	0.055
	Air-11183332-013	West Swim Club - Pool	0.25	0.14
5	Air-11183332-014	Grimsby Residence - Indoors	0.31	0.17
	Air-11183332-015	Grimsby Residence - Outdoors	0.14	0.08
6	Air-11183332-016	Public Works Building – Outdoors	0.09	0.05
7	Air-11183332-017	Community Park – Outdoors	0.14	0.075
8	Air-11183332-018	Willow Pond – Outdoors	0.08	0.044
9	Air-11183332-019	Gower Elementary – Classroom 49	0.10	0.053
	Air-11183332-020	Gower Elementary – North Hallway	<0.07	0.04
	Air-11183332-021	Gower Elementary – Gymnasium	<0.07	0.04
	Air-11183332-022	Gower Elementary – Learning Center	0.32	0.18
	Air-11183332-023	Gower Elementary – Outdoors	0.20	0.11
10	Air-11183332-024	Gower Middle School – Classroom 106	0.29	0.16
	Air-11183332-025	Gower Middle School – Library	0.49	0.27
	Air-11183332-026	Gower Middle School – Classroom 123	0.45	0.25
	Air-11183332-027	Gower Middle School – North Hallway	0.34	0.19
	Air-11183332-028	Gower Middle School – Outdoors	0.08	0.043
11	Air-11183332-029	Hinsdale High School – Lower Level/Classroom 156	0.45	0.25
	Air-11183332-030	Hinsdale High School – 2 nd Level/Classroom 224	0.15	0.083
	Air-11183332-031	Hinsdale High School – 2 nd Level/Library	0.08	0.043
	Air-11183332-032	Hinsdale High School – 3 rd Level/Hallway outside Classroom 311	0.25	0.14
	Air-11183332-033	Hinsdale High School – 3 rd Level/Classroom 357	0.23	0.13
	Air-11183332-034	Hinsdale High School – Outdoors	0.12	0.069

5. Discussion

GHD tested at multiple locations within the Village of Willowbrook, including locations that were upwind of Sterigenics during the entire test. The test results confirm the presence of EtO throughout Willowbrook, in samples upwind and downwind of Sterigenics, which are present above the long-term risk-based level used by the USEPA and ATSDR in their May and August 2018 sampling and risk evaluation efforts.

The outdoor sample located at Willowbrook Village Hall was co-located with a USEPA canister. The Village's outside sample result was 0.32 ppb (0.576 $\mu\text{g}/\text{m}^3$) and USEPA's sample result on that day was 0.458 ppb (0.824 $\mu\text{g}/\text{m}^3$). The sampling times were slightly offset; the USEPA sample was observed being deployed approximately 2 hours after the GHD sample.



Based on the presence of EtO in samples upwind of the Sterigenics facilities, other upwind sources were determined to be present on the day of sampling. Outdoor samples at locations upwind of Sterigenics indicated the presence of EtO at an average of approximately 0.071 ppb. Samples downwind of Sterigenics indicated 0.201 ppb EtO, which is higher than samples collected upwind of Sterigenics.

Hydrocarbon combustion is thought to be a potential source of EtO emissions, however, not enough information is available to quantify these emissions. A California study indicated a range from 0.016 ppb EtO in remote coastal locations, to 0.03 ppb EtO in the Los Angeles suburbs, to 0.8 ppb EtO in downtown Los Angeles.¹ Other studies have yielded similar results.

GHD also evaluated the levels of EtO inside buildings relative to the levels of EtO outside buildings. The measured levels of EtO inside buildings were found to be higher than outside buildings, with the lone exception of the Village Hall. Indoor samples in the Willowbrook Police Department indicated similar EtO levels as other indoor locations such as the Farber Residence.

Potential sources of indoor EtO include food products, pest control procedures (fumigation), vehicle exhaust, and tobacco which has been fumigated. Certain new building or furnishing material may also contain trace amounts of EtO, among other volatile organic compounds (VOCs). Building materials paints and coatings have been found to contain EtO ranging from trace amounts to 0.5% by weight. EtO may also be present and detectable in skin care/beauty products.² Food products, especially spices not containing salt, may be fumigated with EtO.

GHD reviewed a number of studies to gain an understanding of how EtO may behave inside occupied spaces, and to what degree it may be present in other indoor spaces previously studied. The Village's sampling study has shown that indoor concentrations were generally higher than outdoor concentrations. GHD consulted the limited scientific literature to help understand what may have caused this result. A previous study in Canada concluded that EtO released to air is believed to remain in atmosphere and is unlikely to be transferred to other media.³ The study detected EtO at a level of 4 µg/m³ in 1 of 50 randomly selected residences, using a laboratory method with a detection limit of 0.19 µg/m³. EtO was detected at 5 µg/m³ in 3 of 24 personal air samples collected from an occupant of each of the 50 residences. The literature reviewed indicates the presence of EtO in indoor spaces not specifically correlated with outdoor sources. Further research would be needed to better explain or explore the possibility of potential adsorption of low levels of EtO.

6. Electronic Field Documentation and Reporting

Appropriate field documentation was collected including a daily activity log, sampling field forms, site observations, and other pertinent documentation. The daily activity logs consisted of observations and field notes taken throughout the day. The daily log were recorded either in bound log books or on pre-printed daily log forms. GHD Field Staff utilized mobile data collection and data management tools for field data collection, archiving, and reporting. Mobile iPads were used during the project to increase the accuracy of the data collected and decrease the reporting time.

¹ California Environmental Protection Agency Air Resources Board. Research Note 93-6. November 1993.

² Filser, J.G., Kreuzer, P.E., Greim, H. et al. Archives of Toxicology (1994) 68: 401.

³ World Health Organization. Concise International Chemical Assessment Document 54. 2003.



All sampling data and supporting documentation collected during this project were stored in a comprehensive on-Site electronic database. GHD used a custom database application that uploaded field data directly to a secure GHD server. GHD and approved users were granted access to view current and historical photographs and other supporting documentation collected in real time through a secure GHD website. GHD used mobile data collection and data management tools for field data collection, archiving and reporting.

7. Conclusions and Recommendations

The test results from our monitoring confirm the presence of EtO throughout Willowbrook, in samples upwind and downwind of Sterigenics. The EtO levels identified through our monitoring program range from 5 to 10 times lower than those identified by the USEPA in May of 2018. The sampling results indicate that EtO is present in locations both upwind and downwind of Sterigenics above certain long-term risk-based levels established by the USEPA. Outdoor samples at upwind locations indicate presence of EO at average of approximately 0.071 ppb.

GHD evaluated the amounts of EtO inside buildings relative to the amounts of EtO outside buildings. According to the results, the measured levels of EtO inside buildings were found to be higher than the outside with the exception of the Village Hall. This suggests that indoor EtO may originate from other indoor sources, such as household and consumer products such as cigarettes, auto products, cleaners, food sterilized with EtO, and home maintenance products. Indoor samples in the Willowbrook Police Department indicated similar EtO levels as other indoor locations such as the Farber Residence. Further research is needed to evaluate the potential adsorption of low levels of EtO to building and indoor materials over time; for example, indoor sources such as those noted above could yield low levels of EtO indoors, which could temporarily accumulate until exchange with outdoor air.

Based on these results, we conclude that further evaluation is recommended across a broader range of sampling conditions including: meteorological, Sterigenics production rates, further afield background locations, and further study, on a longer-term basis, comparing indoor and outdoor levels at the same location, to completely assess the potential contribution by Sterigenics to air quality in the Village of Willowbrook. A longer-term sampling study is required to draw conclusions appropriate to long-term risk exposure criteria.

8. Quality Assurance/Quality Control and Reporting

All sampling records were reviewed to ensure accuracy and completeness. The sampling information was uploaded into an electronic database and each record was subjected to a Quality Assurance/Quality Control (QA/QC) review. All project related records and documents were reviewed to ensure accuracy and completeness and will be archived in GHD's Laserfiche system upon completion of the project. All data contained in the final report has been reviewed by a GHD CIH and is considered final. This report and supporting documentation was prepared and reviewed according to GHD's ISO 9001 quality review process. The air sampling activities were performed under the direction of a GHD CIH and all air sampling data were reviewed by a GHD CIH.



Respectfully Submitted,

GHD Services, Inc.

This report was prepared by:

A handwritten signature in dark ink, appearing to read "Dyron Hamlin", written over a horizontal line.

Dyron Hamlin, MS, PE, CIH

This report was reviewed by:

A handwritten signature in dark ink, appearing to read "Benjamin Chandler", written over a horizontal line.

Benjamin Chandler, MS, CIH, CSP

This report was reviewed by:

A handwritten signature in dark ink, appearing to read "Kevin Kearney", written over a horizontal line.

Kevin Kearney, MS, ASP

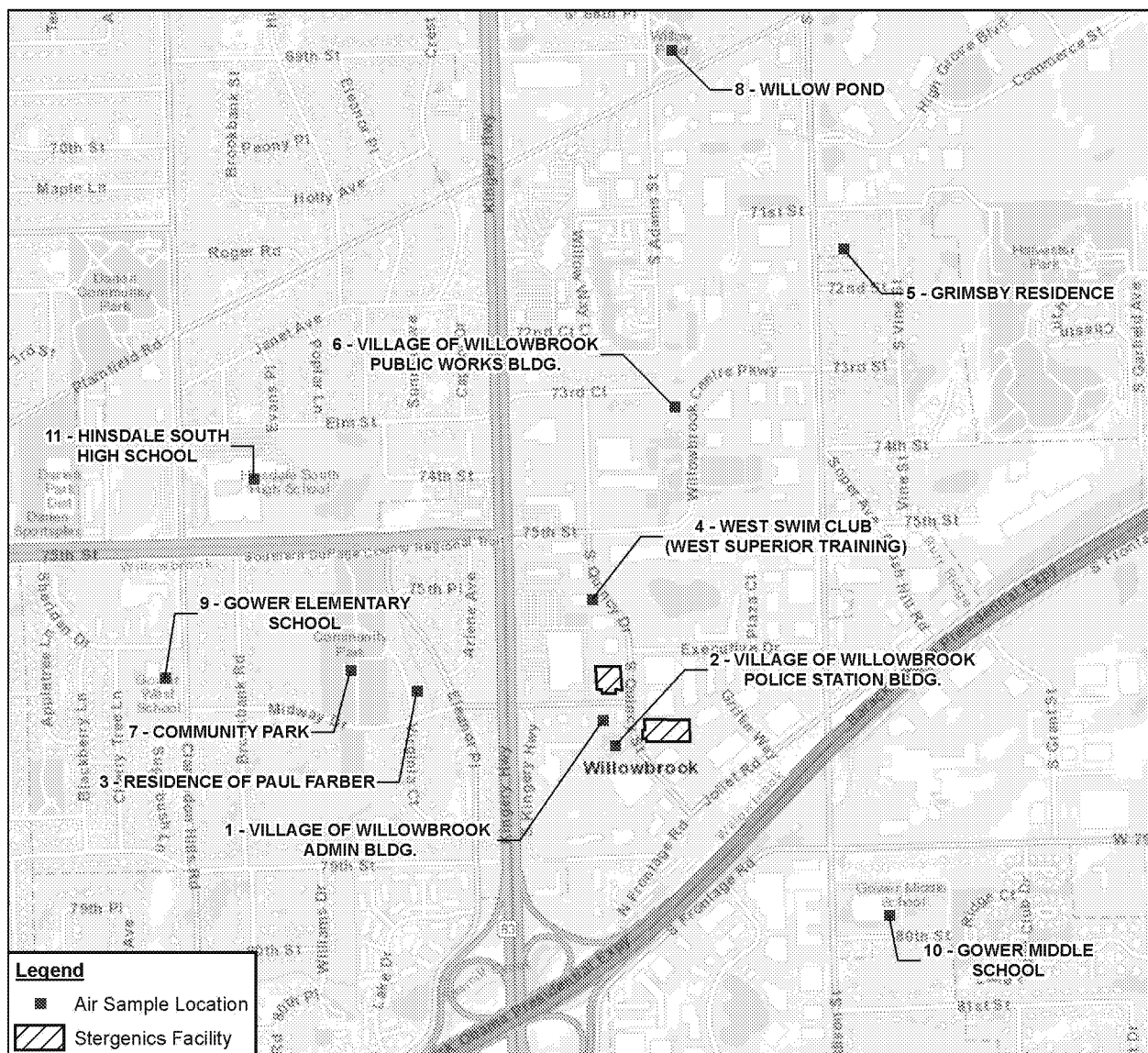


Appendix A

Air Sampling Map

Summary of Area Air Sampling Results for Ethylene Oxide Village of Willowbrook, Illinois

Location ID	Sample Location	Measured Airborne Concentration
1	Willowbrook Village Hall – Third Floor	0.19 ppb
	Willowbrook Village Hall – Lower Level	0.29 ppb
	Willowbrook Village Hall – Lobby	0.28 ppb
	Willowbrook Village Hall – Outdoors	0.32 ppb
2	Willowbrook Police Department – Patrol Room	0.27 ppb
	Willowbrook Police Department – Evidence Room	0.12 ppb
	Willowbrook Police Department – Records Front Office	0.43 ppb
	Willowbrook Police Department – Detective Conference Room	0.45 ppb
3	Willowbrook Police Department – Outdoors	0.24 ppb
	Farber Residence – Indoors	0.37 ppb
	Farber Residence – Outdoors	0.085 ppb
	West Swim Club – Outdoors	0.055 ppb
4	West Swim Club – Pool	0.14 ppb
	Grimsby Residence – Indoors	0.17 ppb
	Grimsby Residence – Outdoors	0.080 ppb
	Public Works Building – Outdoors	0.050 ppb
5	Community Park – Outdoors	0.075 ppb
	Willow Pond – Outdoors	0.044 ppb
6	Gower Elementary – Classroom 49	0.053 ppb
	Gower Elementary – North Hallway	< 0.040 ppb
	Gower Elementary – Gymnasium	< 0.040 ppb
	Gower Elementary – Learning Center	0.18 ppb
7	Gower Elementary – Outdoors	0.11 ppb
	Gower Middle School – Classroom 106	0.16 ppb
	Gower Middle School – Library	0.27 ppb
	Gower Middle School – Classroom 123	0.25 ppb
8	Gower Middle School – North Hallway	0.19 ppb
	Gower Middle School – Outdoors	0.043 ppb
9	Hinsdale High School – Lower Level/Classroom 156	0.25 ppb
	Hinsdale High School – 2 nd Level/Classroom 224	0.083 ppb
	Hinsdale High School – 2 nd Level/Library	0.043 ppb
	Hinsdale High School – 3 rd Level/Hallway outside Classroom 311	0.14 ppb
10	Hinsdale High School – 3 rd Level/Classroom 357	0.13 ppb
	Hinsdale High School – Outdoors	0.069 ppb
11	Hinsdale High School – Outdoors	0.069 ppb



Source: ESRI World Street Map, Esri, DeLorme, HERE, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Tomtom

0 850 1,700
Feet

Coordinate System:
NAD 1983 StatePlane Illinois East
FIPS 1201 Feet



VILLAGE OF WILLOWBROOK, ILLINOIS

NOVEMBER 16-17, 2018
AREA AIR SAMPLING LOCATIONS

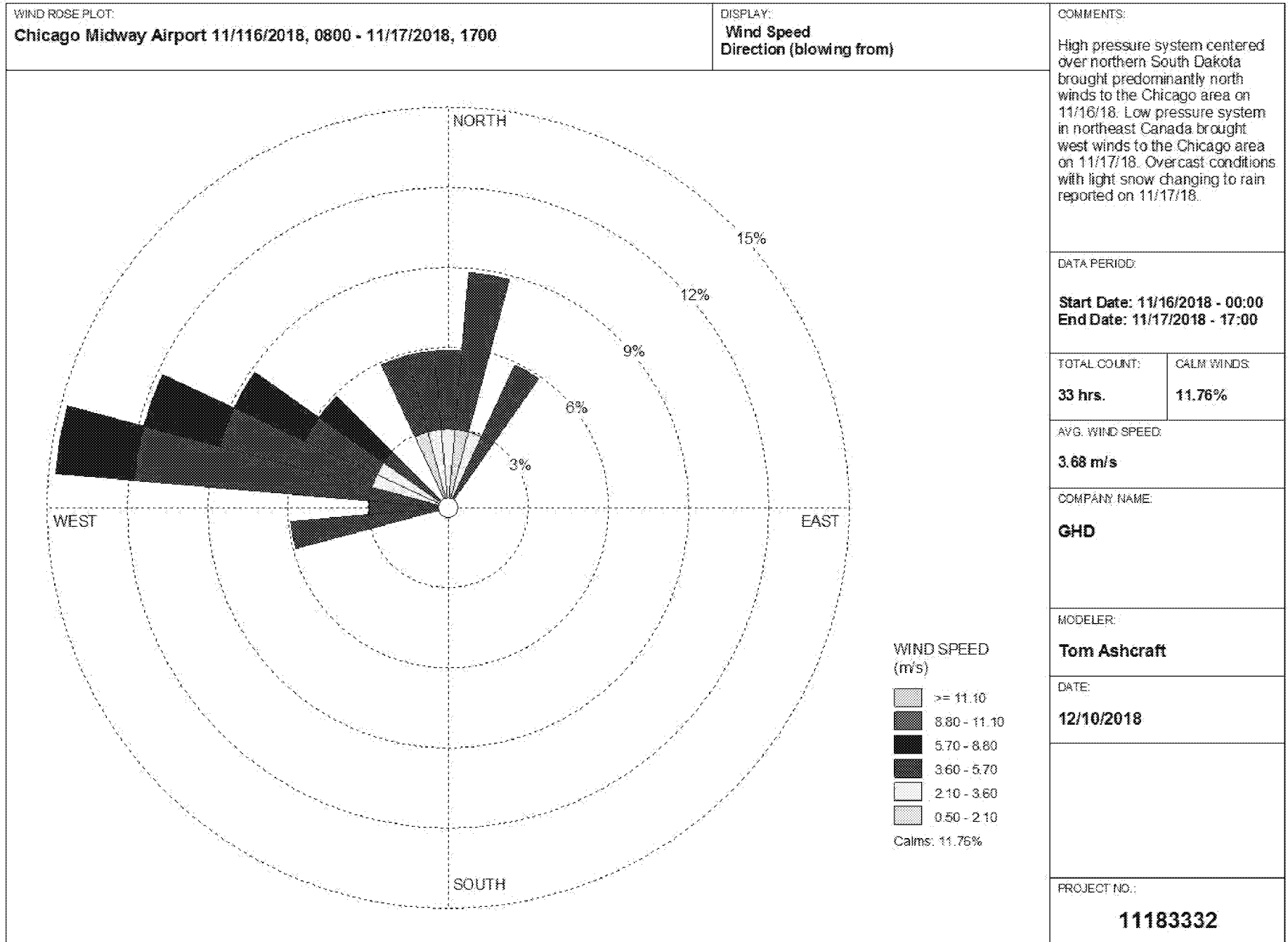
11183332
Dec 7, 2018

FIGURE 3

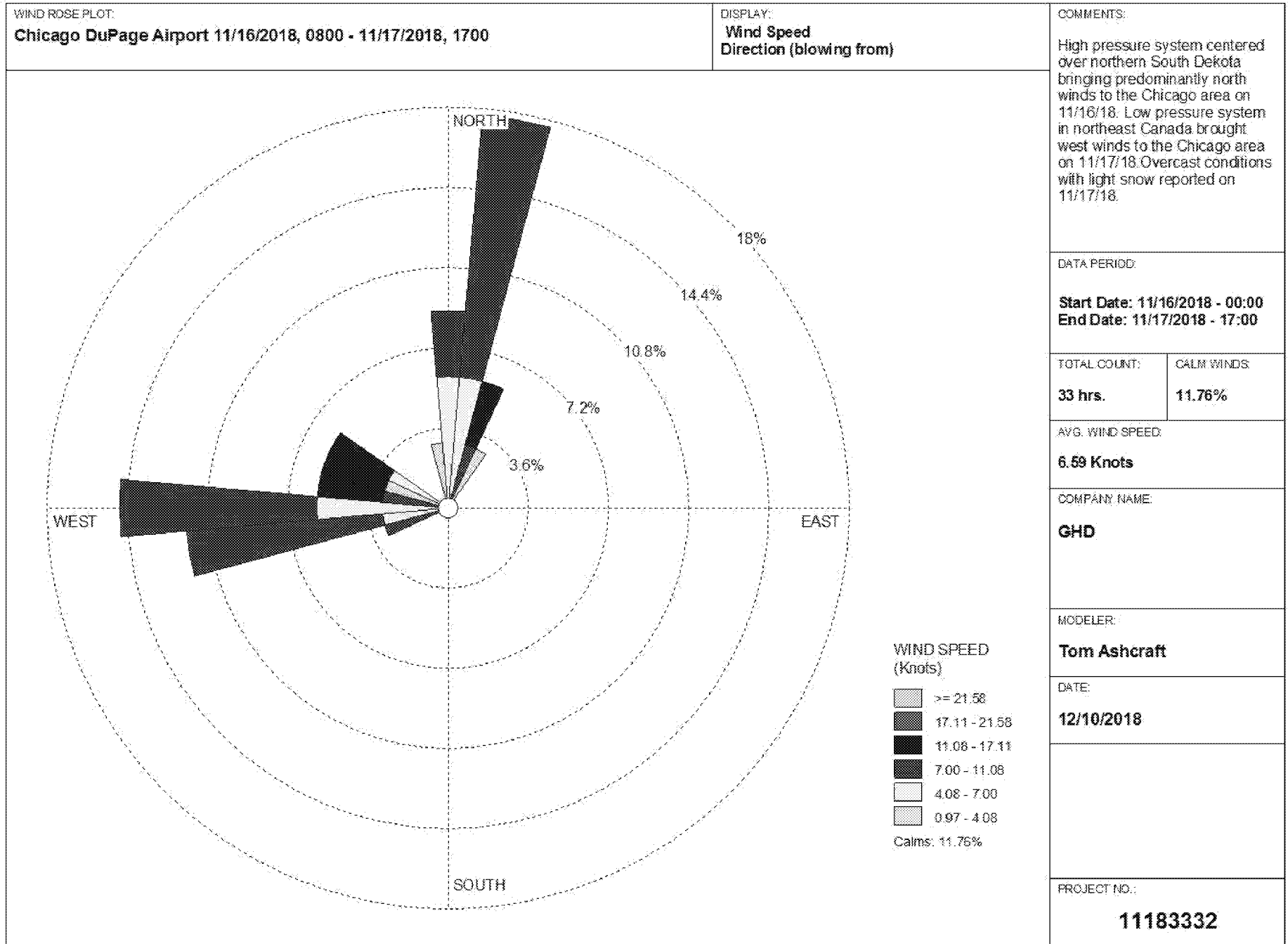


Appendix B

Wind Rose Map



WRPLOT View - Lakes Environmental Software



WRPLOT View - Lakes Environmental Software



Appendix C Lab Reports



GALSON

Mr. Ben Chandler
GHD Services Inc.
11719 Hinson Road
Suite 100
Little Rock, AR 72212

November 28, 2018

DOH ELAP #11626
AIHA-LAP #100324

Account# 29016

Login# L463406

Dear Mr. Chandler:

Enclosed are the analytical results for the samples received by our laboratory on November 19, 2018. All test results meet the quality control requirements of AIHA-LAP and NELAC unless otherwise stated in this report. All samples on the chain of custody were received in good condition unless otherwise noted.

Sample AIR-11183332-11/16/2018-035 was rejected and does not appear on this report due to being received at full vacuum, indicating no sample was taken.

Results in this report are based on the sampling data provided by the client and refer only to the samples as they were received at the laboratory. When possible, non-IOM samples will be retained for 14 days following the date of this report (unless an extension is specifically requested). IOM samples are retained for 7 days.

Current Scopes of Accreditation can be viewed at www.sgsgalson.com in the accreditations section of the "About" page.

Please contact Charlene Moser at (888) 432-5227, if you would like any additional information regarding this report. Thank you for using SGS Galson.

Sincerely,

SGS Galson

A handwritten signature in cursive script that reads 'Lisa Swab'.

Lisa Swab
Laboratory Director

Enclosure(s)

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

SGS

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client

: GHD Services Inc.
Site : Village of Willowbrook
Project No. : 11183332

Date Sampled : 16-NOV-18 Account No.: 29016
Date Received : 19-NOV-18 Login No. : L463406
Date Analyzed : 26-NOV-18 - 28-NOV-18 Units : ppbv
Report ID : 1104572

Galson ID: L463406-1 L463406-2 L463406-3
Client ID: ppbv AIR-11183332-001 AIR-11183332-002 AIR-11183332-003

Ethylene oxide 0.040 0.19 0.29 0.28

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS QC by : SAP Supervisor: SAP
Collection Media : 6L Summa Approved by : SAP
Submitted by : DJW Date : 28-NOV-18 NYS DOH # : 11626

< -Less Than mg -Milligrams m3 -Cubic Meters ppbv-Parts per Billion Volume NS -Not Specified L -Liters
> -Greater Than ug -Micrograms ND -Not Detected ppmv-Parts per Million Volume LOQ -Limit of Quantitation NA -Not Applicable

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

SGS

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client : GHD Services Inc.
Site : Village of Willowbrook
Project No. : 11183332
Date Sampled : 16-NOV-18
Date Received : 19-NOV-18
Date Analyzed : 26-NOV-18 - 28-NOV-18
Report ID : 1104572

Account No.: 29016
Login No. : L463406
Units : ppbv

Galson ID: L463406-4 L463406-5 L463406-6
Client ID: ppbv AIR-11183332-004 AIR-11183332-005 AIR-11183332-006

Ethylene oxide 0.040 0.32 0.27 0.25

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS QC by : SAP Supervisor: SAP
Collection Media : 6L Summa Approved by : SAP
Submitted by : DJW Date : 28-NOV-18 NYS DOH # : 11626

< -Less Than mg -Milligrams m3 -Cubic Meters ppbv-Parts per Billion Volume NS -Not Specified L -Liters
> -Greater Than ug -Micrograms ND -Not Detected ppmv-Parts per Million Volume LOQ -Limit of Quantitation NA -Not Applicable

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

SGS

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client : GHD Services Inc.
Site : Village of Willowbrook
Project No. : 11183332
Date Sampled : 16-NOV-18
Date Received : 19-NOV-18
Date Analyzed : 26-NOV-18 - 28-NOV-18
Report ID : 1104572

Account No.: 29016
Login No. : L463406
Units : ppbv

Galson ID: L463406-7 L463406-8 L463406-9
Client ID: ppbv AIR-11183332-007 AIR-11183332-008 AIR-11183332-009

Ethylene oxide 0.040 0.43 0.45 0.24

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS QC by : SAP Supervisor: SAP
Collection Media : 6L Summa Approved by : SAP
Submitted by : DJW Date : 28-NOV-18 NYS DOH # : 11626

< -Less Than mg -Milligrams m3 -Cubic Meters ppbv-Parts per Billion Volume NS -Not Specified L -Liters
> -Greater Than ug -Micrograms ND -Not Detected ppmv-Parts per Million Volume LOQ -Limit of Quantitation NA -Not Applicable

LEIAP Lab ID #04083

LABORATORY ANALYSIS REPORT

GALSON

Client

: GHD Services Inc.

6601 Kirkville Road
 East Syracuse, NY 13057
 (315) 432-5227
 FAX: (315) 437-0571
 www.sgsgalson.com

Site : Village of Willowbrook
 Project No. : 11183332

Date Sampled : 16-NOV-18 Account No.: 29016
 Date Received : 19-NOV-18 Login No. : L463406
 Date Analyzed : 26-NOV-18 - 28-NOV-18 Units : ppbv
 Report ID : 1104572

Galson ID: L463406-10 L463406-12
 Client ID: ppbv AIR-11183332-010 AIR-11183332-011 AIR-11183332-012

Ethylene oxide 0.040 0.37 0.085 0.055

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS QC by : SAP Supervisor: SAP
 Collection Media : 6L Summa Approved by : SAP
 Submitted by : DJW Date : 28-NOV-18 NYS DOH # : 11626

< -Less Than mg -Milligrams m3 -Cubic Meters ppbv-Parts per Billion Volume NS -Not Specified L -Liters
 > -Greater Than ug -Micrograms ND -Not Detected ppmv-Parts per Million Volume LOQ -Limit of Quantitation NA -Not Applicable

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

GALSON

Client

: GHD Services Inc.

Site

: Village of Willowbrook

Project No.

: 11183332

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Date Sampled : 16-NOV-18

Date Received : 19-NOV-18

Date Analyzed : 26-NOV-18 - 28-NOV-18

Report ID : 1104572

Account No.: 29016

Login No. : L463406

Units : ppbv

Galson ID:

LOQ L463406-13

Client ID:

ppbv AIR-11183332-013

L463406-14

AIR-11183332-014

L463406-15

AIR-11183332-015

Ethylene oxide

0.040

0.14

0.17

0.080

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
Collection Media : 6L Summa
Submitted by : DJW

QC by : SAP

Approved by : SAP

Supervisor: SAP

Date : 28-NOV-18 NYS DOH # : 11626

< -Less Than

mg -Milligrams

m3 -Cubic Meters

ppbv-Parts per Billion

Volume NS -Not Specified

LOQ -Limit of Quantitation

L -Liters

> -Greater Than

ug -Micrograms

ND -Not Detected

ppmv-Parts per Million

Volume LOQ -Limit of Quantitation

NA -Not Applicable

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

GALSON

Client

: GHD Services Inc.

Site

: Village of Willowbrook

Project No.

: 11183332

Date Sampled

: 16-NOV-18

Date Received

: 19-NOV-18

Date Analyzed

: 26-NOV-18 - 28-NOV-18

Report ID

: 1104572

Account No.: 29016

Login No. : L463406

Units : ppbv

6601 Kirkville Road
 East Syracuse, NY 13057
 (315) 432-5227
 FAX: (315) 437-0571
 www.sgsgalson.com

Galson ID:

L463406-16

Client ID:

ppbv AIR-11183332-016

L463406-17

AIR-11183332-017

L463406-18

AIR-11183332-018

Ethylene oxide

0.040

0.050

0.075

0.044

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
 Collection Media : 6L Summa
 Submitted by : DJW

QC by

: SAP

Supervisor: SAP

Approved by : SAP

Date : 28-NOV-18 NYS DOH # : 11626

< -Less Than

mg -Milligrams

m3 -Cubic Meters

ppbv-Parts per Billion

Volume NS -Not Specified

L -Liters

> -Greater Than

ug -Micrograms

ND -Not Detected

ppmv-Parts per Million

Volume LOQ -Limit of Quantitation

NA -Not Applicable

LEIAP Lab ID #04083

LABORATORY ANALYSIS REPORT

GALSON

Client

: GHD Services Inc.

Site

: Village of Willowbrook

Project No.

: 11183332

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Date Sampled : 16-NOV-18

Date Received : 19-NOV-18

Date Analyzed : 26-NOV-18 - 28-NOV-18

Report ID : 1104572

Account No.: 29016

Login No. : L463406

Units : ppbv

Galson ID:

LOQ L463406-19

L463406-20

L463406-22

Client ID:

ppbv AIR-11183332-020

AIR-11183332-019

AIR-11183332-021

Ethylene oxide

0.040

<0.040

0.053

<0.040

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
Collection Media : 6L Summa
Submitted by : DJW

QC by : SAP

Approved by : SAP

Supervisor: SAP

Date

: 28-NOV-18

NYS DOH # : 11626

< -Less Than

mg -Milligrams

m3 -Cubic Meters

ppbv-Parts per Billion

Volume

NS -Not Specified

L

-Liters

> -Greater Than

ug -Micrograms

ND -Not Detected

ppmv-Parts per Million

Volume

LOQ -Limit of Quantitation

NA

-Not Applicable

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

GALSON

6601 Kirkville Road
 East Syracuse, NY 13057
 (315) 432-5227
 FAX: (315) 437-0571
 www.sgsgalson.com

Client : GHD Services Inc.
 Site : Village of Willowbrook
 Project No. : 11183332

Date Sampled : 16-NOV-18
 Date Received : 19-NOV-18
 Date Analyzed : 26-NOV-18 - 28-NOV-18
 Report ID : 1104572

Account No.: 29016
 Login No. : L463406
 Units : ppbv

Galson ID: L463406-23 L463406-25 L463406-26
 Client ID: ppbv AIR-11183332-022 AIR-11183332-023 AIR-11183332-024

Ethylene oxide 0.040 0.18 0.11 0.16

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS QC by : SAP Supervisor: SAP
 Collection Media : 6L Summa Approved by : SAP
 Submitted by : DJW Date : 28-NOV-18 NYS DOH # : 11626

< -Less Than mg -Milligrams m3 -Cubic Meters ppbv-Parts per Billion Volume NS -Not Specified L -Liters
 > -Greater Than ug -Micrograms ND -Not Detected ppmv-Parts per Million Volume LOQ -Limit of Quantitation NA -Not Applicable

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

SGS

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client : GHD Services Inc.
Site : Village of Willowbrook
Project No. : 11183332
Date Sampled : 16-NOV-18
Date Received : 19-NOV-18
Date Analyzed : 26-NOV-18 - 28-NOV-18
Report ID : 1104572

Account No.: 29016
Login No. : L463406
Units : ppbv

Galson ID: L463406-27 L463406-30
Client ID: ppbv AIR-11183332-025 AIR-11183332-026 AIR-11183332-027

Ethylene oxide 0.040 0.27 0.25 0.19

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS QC by : SAP Supervisor: SAP
Collection Media : 6L Summa Approved by : SAP
Submitted by : DJW Date : 28-NOV-18 NYS DOH # : 11626

< -Less Than mg -Milligrams m3 -Cubic Meters ppbv-Parts per Billion Volume NS -Not Specified L -Liters
> -Greater Than ug -Micrograms ND -Not Detected ppmv-Parts per Million Volume LOQ -Limit of Quantitation NA -Not Applicable

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

GALSON

6601 Kirkville Road
 East Syracuse, NY 13057
 (315) 432-5227
 FAX: (315) 437-0571
 www.sgsgalson.com

Client : GHD Services Inc.
 Site : Village of Willowbrook
 Project No. : 11183332

Date Sampled : 16-NOV-18
 Date Received : 19-NOV-18
 Date Analyzed : 26-NOV-18 - 28-NOV-18
 Report ID : 1104572

Account No.: 29016
 Login No. : L463406
 Units : ppbv

Galson ID: L463406-31 L463406-32 L463406-33
 Client ID: ppbv AIR-11183332-028 AIR-11183332-029 AIR-11183332-030

Ethylene oxide 0.040 0.043 0.10 0.083

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
 Collection Media : 6L Summa
 Submitted by : DJW

QC by : SAP
 Approved by : SAP
 Date : 28-NOV-18 NYS DOH # : 11626

Supervisor: SAP

< -Less Than mg -Milligrams m3 -Cubic Meters ppbv-Parts per Billion Volume NS -Not Specified L -Liters
 > -Greater Than ug -Micrograms ND -Not Detected ppmv-Parts per Million Volume LOQ -Limit of Quantitation NA -Not Applicable

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

GALSON

Client

: GHD Services Inc.

Site

: Village of Willowbrook

Project No.

: 11183332

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Date Sampled : 16-NOV-18

Date Received : 19-NOV-18

Date Analyzed : 26-NOV-18 - 28-NOV-18

Report ID : 1104572

Account No.: 29016

Login No. : L463406

Units : ppbv

Galson ID:

LOQ L463406-34

L463406-35

L463406-36

Client ID:

ppbv AIR-11183332-031

AIR-11183332-032

AIR-11183332-033

Ethylene oxide

0.040

<0.040

0.14

0.13

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
Collection Media : 6L Summa
Submitted by : DJW

QC by : SAP

Approved by : SAP

Supervisor: SAP

Date : 28-NOV-18 NYS DOH # : 11626

< -Less Than mg -Milligrams

m3 -Cubic Meters

ppbv-Parts per Billion Volume

NS -Not Specified

L -Liters

> -Greater Than ug -Micrograms

ND -Not Detected

ppmv-Parts per Million Volume

LOQ -Limit of Quantitation

NA -Not Applicable

LELAP Lab ID #04083

LABORATORY ANALYSIS REPORT

SGS

6601 Kirkville Road
East Syracuse, NY 13057
(315) 432-5227
FAX: (315) 437-0571
www.sgsgalson.com

Client : GHD Services Inc.
Site : Village of Willowbrook
Project No. : 11183332
Date Sampled : 16-NOV-18
Date Received : 19-NOV-18
Date Analyzed : 26-NOV-18 - 28-NOV-18
Report ID : 1104572

Account No.: 29016
Login No. : I463406
Units : ppbv

Galson ID: I463406-37
Client ID: ppbv AIR-11183332-034

Ethylene oxide 0.040 0.069

Analytical Method: mod. OSHA PV2120/mod. EPA TO15; GC/MS
Collection Media : 6L Summa
Submitted by : DJW
QC by : SAP
Approved by : SAP
Date : 28-NOV-18
Supervisor: SAP
NYS DOH # : 11626

< -Less Than mg -Milligrams m3 -Cubic Meters ppbv-Parts per Billion Volume NS -Not Specified L -Liters
> -Greater Than ug -Micrograms ND -Not Detected ppmv-Parts per Million Volume LOQ -Limit of Quantitation NA -Not Applicable



GALSON

LABORATORY FOOTNOTE REPORT

Client Name : GHD Services Inc.
 Site : Village of Willowbrook
 Project No. : 11183332
 Date Sampled : 16-NOV-18
 Date Received : 19-NOV-18
 Date Analyzed : 26-NOV-18 - 28-NOV-18
 Account No.: 29016
 Login No. : L463406
 6601 Kirkville Road
 East Syracuse, NY 13057
 (315) 432-5227
 FAX: (315) 437-0571
 www.sgsgalson.com

This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise noted below, all quality control results associated with the samples were within established control limits or did not impact reported results.

Note: The findings recorded within this report were drawn from analysis of the sample(s) provided to the laboratory by the Client (or a third party acting at the Client's direction). The laboratory does not have control over the sampling process, including but not limited to the use of field equipment and collection media, as well as the sampling duration, collection volume or any other collection parameter used by the Client. The findings herein constitute no warranty of the sample's representativeness of any sampled environment, and strictly relate to the samples as they were presented to the laboratory. For recommended sampling collection parameters, please refer to the Sampling and Analysis Guide at www.sgsgalson.com

Unrounded results are carried through the calculations that yield the final result and the final result is rounded to the number of significant figures appropriate to the accuracy of the analytical method. Please note that results appearing in the columns preceding the final result column may have been rounded and therefore, if carried through the calculations, may not yield an identical final result to the one reported.

The stated LOQs for each analyte represent the demonstrated LOQ concentrations prior to correction for desorption efficiency (if applicable). Unless otherwise noted below, reported results have not been blank corrected for any field blank or method blank.

L463406 (Report ID: 1104572) :
 SOPs: in-vocs(35)

L463406-16 (Report ID: 1104572) :
 Sample canister was received at/near ambient pressure.

	mg -Milligrams	m3 -Cubic Meters	kg -Kilograms	ppm -Parts per Million	NA -Not Applicable
< -Less Than	ug -Micrograms	l -Liters	NS -Not Specified	ND -Not Detected	



GALSON

LABORATORY FOOTNOTE REPORT

Client Name : GHD Services Inc.
 Site : Village of Willowbrook
 Project No. : 11183332
 Date Sampled : 16-NOV-18
 Date Received : 19-NOV-18
 Date Analyzed : 26-NOV-18 - 28-NOV-18
 Account No.: 29016
 Login No. : L463406
 6601 Kirkville Road
 East Syracuse, NY 13057
 (315) 432-5227
 FAX: (315) 437-0571
 www.sgsgalson.com

L463406 (Report ID: 1104572):

Accuracy and mean recovery data presented below is based on a 95% confidence interval (k=2). The estimated accuracy applies to the media, technology, and SOP referenced in this report and does not account for the uncertainty associated with the sampling process. The accuracy is based solely on spike recovery data from internal quality control samples. Where N/A appears below, insufficient data is available to provide statistical accuracy and mean recovery values for the associated analyte.

Parameter	Accuracy	Mean Recovery
Ethylene oxide	N/A	N/A

< -Less Than	mg -Milligrams	m3	-Cubic Meters	kg -Kilograms	ppm -Parts per Million	NA -Not Applicable
> -Greater Than	ug -Micrograms	l	-Liters	NS -Not Specified	ND -Not Detected	

3-

gray carts

Case: 1:19-cv-01219 Document #: 24-2 Filed: 02/20/19 Page 46 of 49 PageID #:289

783830864345
Date: 11/19/18
Shipper: FEDEX
Initials: MAK
Prep: UNKNOWN

783830864356
Date: 11/19/18
Shipper: FEDEX
Initials: MAK
Prep: UNKNOWN

☐ New Client? Report To*: Ben Chandler / Dyron Hamlin
11719 Hinson Road, Suite 100
Little Rock, Arkansas 722212
Client Account No.*:
Phone No.*: 501-224-1926
Cell No.: 501-366-3999
Email Results to: benjamin.chandler@ghd.com
Email address: dyron.hamlin@ghd.com

Invoice To*: Art Greeley
Phone No.:
Email: art.greeley@ghd.com
P.O. No.:
Credit Card: ☐ Card on File ☐ Call for Credit Card Info.

☐ Samples submitted using the FreePumpLoan™ Program ☐ Samples submitted using the FreeSamplingBadges™ Program

L 463406

<input checked="" type="checkbox"/> Standard	0%	Site Name: Village of Willowbrook	Project: 11183332	Sampled by: Ben Chandler			
<input type="checkbox"/> 4 Business Days	35%	List description of industry or Process/interferences present in sampling area: State samples were collected in (e.g., NY) IL					
<input type="checkbox"/> 3 Business Days	50%						
<input type="checkbox"/> 2 Business Days	75%						
<input type="checkbox"/> Next Day by 6pm	100%						
<input type="checkbox"/> Next Day by Noon	150%						
<input type="checkbox"/> Same Day	200%	Please indicate which OEL this data will be used for: <input type="checkbox"/> OSHA PEL <input type="checkbox"/> ACGIH TLV <input type="checkbox"/> Cal OSHA <input type="checkbox"/> MSHA <input checked="" type="checkbox"/> Other (specify):					
Sample Identification* (Maximum of 20 Characters)	Date Sampled	Collection Medium	Sample Volume Sample Time Sample Area*	Sample Units*: L, ml, min, in2, cm2, ft2	Analysis Requested*	Method Reference*	Hexavalent Chromium Process (e.g., welding plating, painting, etc.)*
AIR-11183332-11/16/2018-001	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-002	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-003	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-004	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-005	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-006	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-007	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-008	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-009	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-010	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-011	11/16/18	Summa	6L		Ethylene Oxide	TO-15	

*Galson Laboratories will substitute our routine/preferred method if it does not match the method listed on the COC unless this box is checked: ☐ Use method(s) listed on COC

For metals analysis: if requesting an analyte with the option of a lower LOQ, please indicate if the lower LOQ is required (only available for certain analytes - see SAG):

For crystalline silica: form(s) of silica needed must be indicated (Quartz, Cristobalite, and/or Tridymite)*:

Chain of Custody	Print Name/Signature	Date	Time	Print Name/Signature	Date	Time
Relinquished by:	Greg Wesley /	11/17/18	0930	Received by:		
Relinquished by:				Received by: Michelle Krause	11/19/18	0933

Samples received after 3pm will be considered as next day's business

* Required fields, failure to complete these fields may result in a delay in your samples being processed.

M

7

71

☐ New Client? Report To* : Ben Chandler / Dyron Hamlin
11719 Hinson Road, Suite 100
Client Account No.*: Little Rock, Arkansas 72212

Phone No.* : 501-224-1926
Cell No. : 501-366-3999
Email Results to : benjamin.chandler@ghd.com
Email address: dyron.hamlin@ghd.com

Invoice To* : Art Greeley

Phone No.: _____
Email : art.greeley@ghd.com

P.O. No. :

Credit Card: ☐ Card on File ☐ Call for Credit Card Info.




☐ Samples submitted using the FreePumpLoan™ Program☐ Samples submitted using the FreeSamplingBadges™ Program

Need Results By:		(surcharge)	<input type="checkbox"/> Samples submitted using the FreePumpLoan™ Program <input type="checkbox"/> Samples submitted using the FreeSamplingBadges™ Program						
<input checked="" type="checkbox"/> Standard	0%	Site Name: Village of Willowbrook	Project: 11183332		Sampled by: Ben Chandler				
<input type="checkbox"/> 4 Business Days	35%	Comments: *** Didn't receive ZRK 11/19/18							
<input type="checkbox"/> 3 Business Days	50%								
<input type="checkbox"/> 2 Business Days	75%								
<input type="checkbox"/> Next Day by 6pm	100%	List description of industry or Process/interferences present in sampling area:			State samples were collected in (e.g., NY) IL		Please indicate which OEL this data will be used for:		
<input type="checkbox"/> Next Day by Noon	150%						<input type="checkbox"/> OSHA PEL <input type="checkbox"/> ACGIH TLV <input type="checkbox"/> Cal OSHA		
<input type="checkbox"/> Same Day	200%						<input type="checkbox"/> MSHA <input checked="" type="checkbox"/> Other (specify):		
Sample Identification* (Maximum of 20 Characters)		Date Sampled	Collection Medium	Sample Volume Sample Time Sample Area*	Sample Units*: L, ml, min, in2, cm2, ft2	Analysis Requested*		Method Reference^	Hexavalent Chromium Process (e.g., welding plating, painting, etc.)*
AIR-11183332-11/16/2018-012		11/16/18	Summa	6L	Per client: WL158 = 020 WL148 = 022 WL285 = 026 WL282 = 019 WL128 = 021 WL087 = 027 ZRK 11/20/18	Ethylene Oxide		TO-15	
AIR-11183332-11/16/2018-013		11/16/18	Summa	6L		Ethylene Oxide		TO-15	
AIR-11183332-11/16/2018-014		11/16/18	Summa	6L		Ethylene Oxide		TO-15	
AIR-11183332-11/16/2018-015		11/16/18	Summa	6L		Ethylene Oxide		TO-15	
AIR-11183332-11/16/2018-016		11/16/18	Summa	6L		Ethylene Oxide		TO-15	
AIR-11183332-11/16/2018-017		11/16/18	Summa	6L		Ethylene Oxide		TO-15	
AIR-11183332-11/16/2018-018		11/16/18	Summa	6L		Ethylene Oxide		TO-15	
AIR-11183332-11/16/2018-019		11/16/18	Summa	6L		Ethylene Oxide		TO-15	
AIR-11183332-11/16/2018-020		11/16/18	Summa	6L		Ethylene Oxide		TO-15	
AIR-11183332-11/16/2018-021		11/16/18	Summa	6L	Ethylene Oxide		TO-15		
AIR-11183332-11/16/2018-022		11/16/18	Summa	6L	Ethylene Oxide		TO-15		

^aGalsen Laboratories will substitute our routine/preferred method if it does not match the method listed on the COC unless this box is checked: ☐ Use method(s) listed on COC

For metals analysis: if requesting an analyte with the option of a lower LOQ, please indicate if the lower LOQ is required (only available for certain analytes - see SAG):

For crystalline silica: form(s) of silica needed must be indicated (Quartz, Cristobalite, and/or Tridymite)*:

Chain of Custody	Print Name/Signature	Date	Time		Print Name/Signature	Date	Time
Relinquished by :	Greg Wesley / 	11/17/18	0930	Received by :			
Relinquished by :				Received by :	Michelle Krause 	11/19/18	0933

Samples received after 3pm will be considered as next day's business

* Required fields, failure to complete these fields may result in a delay in your samples being processed.

Page 2 of 3

783834155900
Date: 11/19/18
Shipper: FEDEX
Initials: MAK
Prep: UNKNOWN

<input type="checkbox"/> New Client?	Report To*: Ben Chandler / Dyron Hamlin	Invoice To*: Art Greeley
	11719 Hinson Road, Suite 100	
Client Account No.*:	Little Rock, Arkansas 722212	
	Phone No.*: 501-224-1926	Phone No.:
	Cell No.: 501-366-3999	Email: art.greeley@ghd.com
Email Results to:	benjamin.chandler@ghd.com	P.O. No.:
Email address:	dyron.hamlin@ghd.com	Credit Card: <input type="checkbox"/> Card on File <input type="checkbox"/> Call for Credit Card Info.
	<input type="checkbox"/> Samples submitted using the FreePumpLoan™ Program	<input type="checkbox"/> Samples submitted using the FreeSamplingBadges™ Program

Tel: (315) 432-5227
888-432-LABS (5227)

www.sgsgalson.com

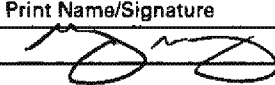
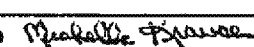
Need Results By:	(surcharge)	Site Name: Village of Willowbrook	Project: 11183332	Sampled by: Ben Chandler
<input checked="" type="checkbox"/> Standard	0%	Comments:		
<input type="checkbox"/> 4 Business Days	35%			
<input type="checkbox"/> 3 Business Days	50%			
<input type="checkbox"/> 2 Business Days	75%			
<input type="checkbox"/> Next Day by 6pm	100%			
<input type="checkbox"/> Next Day by Noon	150%	List description of industry or Process/interferences present in sampling area:		
<input type="checkbox"/> Same Day	200%			
		State samples were collected in (e.g., NY)	Please indicate which OEL this data will be used for:	
		IL	<input type="checkbox"/> OSHA PEL <input type="checkbox"/> ACGIH TLV <input type="checkbox"/> Cal OSHA <input type="checkbox"/> MSHA <input checked="" type="checkbox"/> Other (specify):	

Sample Identification* (Maximum of 20 Characters)	Date Sampled	Collection Medium	Sample Volume Sample Time Sample Area*	Sample Units*: L, ml,min,in2,cm2,ft2	Analysis Requested*	Method Reference^	Hexavalent Chromium Process (e.g., welding plating, painting, etc.)*
AIR-11183332-11/16/2018-023	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-024	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-025	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-026	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-027	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-028	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-029	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-030	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-031	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-032	11/16/18	Summa	6L		Ethylene Oxide	TO-15	
AIR-11183332-11/16/2018-033	11/16/18	Summa	6L		Ethylene Oxide	TO-15	

^Galson Laboratories will substitute our routine/preferred method if it does not match the method listed on the COC unless this box is checked: ☐ Use method(s) listed on COC

For metals analysis: if requesting an analyte with the option of a lower LOQ, please indicate if the lower LOQ is required (only available for certain analytes - see SAG):

For crystalline silica: form(s) of silica needed must be indicated (Quartz, Cristobalite, and/or Tridymite)*:

Chain of Custody	Print Name/Signature	Date	Time		Print Name/Signature	Date	Time
Relinquished by:	Greg Wesley / 	11/17/18	0930	Received by:			
Relinquished by:				Received by:	Michelle Krause 	11/19/18	0933

Samples received after 3pm will be considered as next day's business

* Required fields, failure to complete these fields may result in a delay in your samples being processed.

Page 18 of 19 Report Reference: 1 Generated: 28-NOV-18 15:09

Page 3 of 5

Case: 1:19-cv-01219 Document #: 24-2 Filed: 02/20/19 Page 48 of 49 PageID #:291

ED_002475_00002562-00048



Invoice To*: Art Gruender

www.sgsgalson.com

Phone No.*: 501-724-1926
Cell No.: 501-366-3999
Mail Results to: baigerman.charlie@gmail.com
Email address: chris.hardin@gmail.com




Phone No.: _____
Email: art.grekey@gmail.com
P.O. No.: _____
Credit Card: ☐ Card on File ☐ Call for Credit Card Info.

☐ Samples submitted using the FreePumpLoan™ Program ☐ Samples submitted using the FreeSamplingBadges™ Program[illegible]

^AGalson Laboratories will substitute our routine/preferred method if it does not match the method listed on the CDC unless this box is checked: ☐ Use method(s) listed on CDC

For metals analysis: if requesting an analyte with the option of a lower LOQ, please indicate if the lower LOQ is required (only available for certain analytes - see SAG):

For crystalline silica: form(s) of silica needed must be indicated (Quartz, Cristobalite, and/or Tridymite)* :

Chain of Custody	Print Name/Signature	Date	Time		Print Name/Signature	Date	Time
Relinquished by :		11/17/2019	0930	Received by :			
Relinquished by :				Received by :	Michelle Krause 	11/19/18	1033

Samples received after 3pm will be considered as next day's business

* Required fields, failure to complete these fields may result in a delay in your samples being processed.

Page 4 of 4